

A review of Eurycanthinae: Eurycanthini, with a key to genera, notes on the subfamily and designation of type species

Oliver Zompro, Max-Planck-Institut für Limnologie, AG Tropenökologie, August-Thienemannstraße 2, 24306 Plön, Germany.

Abstract

The genera of Eurycanthinae are a clearly separated group because of the morphology of their genitalia and eggs. The genus *Cnipsus* Redtenbacher, 1908, is possibly a member of Xeroderinae. A key is provided to the genera, and a list with their synonymy included.

A new genus, *Erinaceophasma*, is erected for *Promachus vepres* Brunner von Wattenwyl, 1907, and related species. Three type species of genera are designated: *Trapezaspis kaiman* Redtenbacher, 1908, for *Trapezaspis* Redtenbacher, 1908; *Eupromachus acutangulus* Brunner von Wattenwyl, 1907, for *Eupromachus* Brunner von Wattenwyl, 1907; and *Acanthoderus rachis* Saussure, 1868, for *Cnipsus* Redtenbacher, 1908.

Key words

Phasmida, Phasmatodea, Eurycanthinae, Eurycanthini, *Erinaceophasma* n.gen., genera, type species, synonymy, key.

Introduction

During research into phasmids from New Guinea in the Zoologisches Museum der Humboldt-Universität zu Berlin (ZMHB) the author examined several species of *Neopromachus* Giglio-Tos, 1912. The Museum material includes by far the most important collection of New Guinea phasmids in existence, and most of the species of this genus are present.

It became obvious that *Neopromachus* clearly consists of two groups: species with basally curved profemora, and species with basally straight profemora. Further examination showed that the straight profemora are characteristic for the genera closer related to *Eurycantha* Boisduval, 1835. As no intermediate morphology of the profemora is found in any species, generic rank seems justified.

Günther (1929) removed several species from *Neopromachus*, mostly those from mainland Asia, and stressed that dividing the remaining species in several genera could be necessary (1929: 715). Particularly for *Neopromachus vepres* Brunner von Wattenwyl, 1907, he recommended the erection of a new genus (1929: 717). Nevertheless, he based his statements on characteristics in the spination only and did not once, even in his keys, draw attention to the morphology of the profemora. This is unsatisfactory as culturing of phasmids has shown in many cases that the spination is quite variable. Günther accepted *Neopromachus* as a member of Lonchodinae, but supposed a close relation to the Eurycanthinae (1953: 561).

Eurycanthinae

Several of the genera included in the Eurycanthinae by Günther (1953: 555-556) are of unclear systematic position. In this paper only genera with the typical female ovipositing apparatus consisting of an elongate supraanal plate, which is always projecting beyond an also elongate subgenital plate and a bullet-shaped egg with cordiform micropylar plate and a round, flat operculum lacking a capitulum are accepted as Eurycanthinae.

The genus *Cnipsus* Redtenbacher, 1908: 350, included by Günther (1953: 556), does not agree with these characters and is possibly a member of Xeroderinae. Its type species is *Acanthoderus rachis* Saussure, 1868: 64, by present designation.

The Eurycanthini show a clear line in development to more specialized forms. The most primitive member seems to be *Brachyrtacus*, which looks like a member of related phasmids with a stick-like body, but exhibits the same morphology of the genitalia. *Eupromachus*, *Asprenas* and *Neopromachus* have curved profemora and a rough sternum, this is present in *Erinaceophasma* and *Oreophasma* also, but the profemora are straight. The

straight profemora are a character common to the remaining genera, which agree in their smooth sternal segments. The males of most species of the genera *Canachus*, *Eurycantha*, *Thaumatolectron* and *Dryococelus* have broadened and often strongly spinose metafemora. In *Thaumatolectron* and *Dryococelus* the ovipositing apparatus of the females is secondarily reduced, members of these genera have a strikingly shiny body.

Erinaceophasma n.gen.

Type species: *Promachus vepres* Brunner von Wattenwyl, 1907: 298, pl. 13.6a & 13.6b, by present designation. Lectotype designated by Brock, 1998: 64. Egg described and figured by Zompro, 1997: 2.

Diagnosis

Erinaceophasma n.gen. is very similar to *Neopromachus* Giglio-Tos, 1912, but differs in the straight profemora.

Description

Body with prominent spines. Head rounded rectangular, vertex slightly raised, spinose. Eyes projecting hemispherically. Scapus rounded rectangular, slightly flattened, pedicellus half as long and two thirds as wide. Antennae projecting (laid back) beyond abdominal segment III, consisting of more than 26 elongate segments. Prothorax subquadrate, with deep mediotransverse impression, spinose. Mesothorax subtrapezoidal, lateral margins slightly concave (male) or convex (female), more than three times as long as prothorax. Metathorax subquadrate to transverse, slightly longer than prothorax.

Profemora straight, basally not curved, subquadrate to trapezoidal in cross-section, ventral and dorsal carinae serrated. Protibiae longer than profemora, quadrate in cross-section, edges only slightly serrated. Probasitarsi as long as following four tarsites without claws combined, carinate dorsally. Second tarsite longer than third, third longer than fourth, terminal segment as long as previous three combined. Meso- and metafemora trapezoidal in cross-section, ventral and dorsal carinae serrated, meso- and metatibiae considerably longer than femora, quadrate in cross-section, edges serrated. First to fourth tarsite carinated. Meso- and metabasitarsi slightly shorter than following four segments combined. Second tarsite longer than third one, twice as long as fourth, fifth segment as long as previous three segments combined.

Median segment as long as metathorax, transverse. Abdominal segments II to VII in male slightly longer than wide, of similar length; in female also of similar length, transverse, II to IV increasingly broader, IV widest segment, V to VII narrowed. In male VIII longer than IX, X longer than IX. IX wider than VIII and X, X wider than VIII, medially divided by half of its length. Subgenital plate short, only slightly projecting beyond IX. In female VIII as long as IX, but wider, X narrower than IX, fused with supraanal plate, the latter strongly elongate, carinate dorso medially and acute at its apex. Subgenital plate strongly elongate, but always shorter than supraanal plate. Cerci in both sexes very short and slender.

Egg typical for Eurycanthinae, bullet-like, capsule irregularly carinated, micropylar plate cordiform, operculum round, flat, capitulum absent.

Etymology

Erinaceophasma is taken from the scientific name of the hedgehog, drawing attention to the strong spination.

Genera of Eurycanthini :

- Asprenas* Stål, 1875: 45. Type species: *Asprenas femoratus* Stål, 1875: 89, by monotypy.
 = *Acanthodyta* Sharp, 1898: 85. Type species: *Acanthodyta spiniventris* Sharp, 1898: 86, pl. 8.11, by monotypy, synonymised by Redtenbacher, 1908: 349.
- = *Neanthes* Stål, 1875: 45. Type species: *Neanthes brunneri* Stål 1875: 90, by monotypy, synonymised by Kirby, 1904: 367; preoccupied by *Neanthes* Kinberg, 1865 (Vermees).
- Brachyrtacus* Sharp, 1898: 84. Type species: *Brachyrtacus celatus* Sharp, 1898: 84, by monotypy.
- Canachus* Stål, 1875: 47. Type species: *Canachus crocodilus* Stål, 1875: 90, by subsequent designation of Kirby, 1904: 396.
- Carlius* Uvarov, 1939: 458. Type species: *Brachyrhamphus fecundus* Carl, 1915: 189, by indication; replacement name for *Brachyrhamphus* Carl, 1915: 175, 188. Type species: *Brachyrhamphus fecundus* Carl, 1915: 189, by subsequent designation of Hennemann & Conle, 1999: 9; preoccupied by *Brachyrhamphus* Bertoni, 1901 (Aves), and *Brachyrhamphus* Brandt, 1837 (Aves).
- Dryococelus* Gurney, 1947: 384. Type species: *Karabidion australe* Montrouzier, 1855: 81, by original designation.
- Erinaceophasma* Zompro n.gen. Type species: *Promachus vepres* Brunner von Wattenwyl, 1907: 298, pl. 13.6a & 13.b, by original designation.
- Eupromachus* Brunner von Wattenwyl, 1907: 300. Type species: *Eupromachus acutangulus* Brunner von Wattenwyl, 1907: 300, by present designation.
- Eurycantha* Boisduval, 1835: 647. Type species: *Eurycantha horrida* Boisduval, 1835: 647, by monotypy.
- = *Karabidion* Montrouzier, 1855: 82; unnecessary replacement name for *Eurycantha* Boisduval. Type species: *Eurycantha horrida* Boisduval, 1835: 647, by indication.
- Labidiophasma* Carl, 1915: 174, 186. Type species: *Labidiophasma rouxi* Carl, 1915: 187, by monotypy.
- Microcanachus* Donskoff, 1988: 56. Type species: *Microcanachus matileorum* Donskoff 1988: 57, by original designation.
- Neopromachus* Giglio-Tos, 1912: 94. Type species: *Acanthoderus wallacei* Westwood, 1859: 181, pl. 40.7 & 40.8, by indication; replacement name for *Promachus* Stål, 1875: 17. Type species: *Acanthoderus wallacei* Westwood, 1859: 181, pl. 40.7 & 40.8, by subsequent designation of Kirby, 1904: 326; preoccupied by *Promachus* Loew, 1848 (Diptera); *Promachus* Cresson, 1887 (Hymenoptera) is another junior homonym.
- = *Giglotosea* Aulmann, 1918: 47. Type species: *Acanthoderus wallacei* Westwood, 1859: 181, pl. 40.7 & 40.8, by indication; unnecessary replacement name for the preoccupied *Promachus* Stål, 1875.
- Oreophasma* Günther, 1929: 659. Type species: *Oreophasma polyacanthum* Günther, 1929: 659, by original designation.
- Paracanachus* Carl, 1915: 174, 181. Type species: *Canachus circe* Redtenbacher, 1908: 347, by original designation.
- Symetriophasma* Hennemann, 1996: 457. Type species: *Symetriophasma brevitarsa* Hennemann 1996: 459, fig. 1-5, by original designation.
- Thaumatobactron* Günther, 1929: 663. Type species: *Thaumatobactron poecilosoma* Günther, 1929: 663, pl. 7.1 & 7.2, by original designation.
- = *Poecilobactron* Günther, 1953: 556, misspelling of *Thaumatobactron* Günther, 1929.
- Trapezaspis* Redtenbacher, 1908: 348. Type species: *Trapezaspis kaiman* Redtenbacher, 1908: 348, pl. 16.5, by present designation.

Key to the genera of Eurycanthinae

1. Profemora basally curved. 2
- Profemora straight. 5
2. Dorsal surface of body, pro-, meso- and metasternum smooth or carinate, not armed. *Brachyrtacus*
- Pro-, meso- and metasternum at least slightly granulated, never smooth or carinate, dorsal surface of body spinose or tuberculate. 3
3. Pro-, meso- and metasternum carinate. *Eupromachus*
- Pro-, meso- and metasternum not carinate, body spinose. 4
4. Very elongate, winged. *Asprenas*
- More compact, apterous. *Neopromachus*
5. Pro-, meso- and metasternum rough, tuberculate or spinose. 6
- Pro-, meso- and metasternum smooth. 8
6. Antennae not longer than head and thorax, consisting of about 21 segments.
- *Oreophasma*
- Antennae considerably longer than head and thorax. 7
7. Pronotum subquadrate. *Erinaceophasma*
- Pronotum trapezoidal. *Paracanachus*
8. Mesothorax broadest anteriorly, or with posterolateral edges projecting. 9
- Mesothorax narrower anteriorly than posteriorly. 12
9. Mesothorax trapezoidal, broadest anteriorly. *Trapezaspis*
- Mesothorax subquadrate to rectangular. 10
10. Abdomen broadest in the anterior segments. *Labidiophasma*
- Abdomen broadest in the middle. 11
11. Body strongly spinose. *Symetriophasma*
- Body unarmed. *Microcanachus*
12. Abdomen spinose laterally. 13
- Abdomen not armed, smooth. 14
13. Rudiments of tegmina present. *Canachus*
- Rudiments of tegmina absent. *Eurycantha*
14. Edges of femora and tibiae distinctly keeled. *Thaumatobactron*
- Femora and tibiae almost cylindrical, edges indistinctly keeled. *Dryococelus*

References

- Aulmann, G. (1918) Neuer Phasmiden-Gattungsname. *Entomologische Rundschau, Stuttgart*, 35: 47.
- Boisduval, J.A. (1835) *Voyage de découvertes de l'Astrolabe. Exécuté par ordre du Roi, pendant les années 1826-1827-1828-1829, sous le commandement de M. J. Dumont d'Urville. Faune Entomologique de l'Océan Pacifique, avec l'illustration des Insectes nouveaux recueillies pendant le voyage.* J. Tastu, Paris. i-vii, 647-650, pl. 2.
- Brock, P.D. (1998) Catalogue of type specimens of Stick- and Leaf-Insects in the Naturhistorisches Museum Wien (Insecta: Phasmida). *Kataloge der wissenschaftlichen Sammlungen des Naturhistorischen Museums in Wien*, 13(5): 1-72.
- Brunner von Wattenwyl, C. (1907) *Die Insektenfamilie der Phasmiden. II. Phasmidae Anareolatae (Clitumnini, Lonchodini, Bacunculini).* Leipzig.
- Carl, J. (1915) Phasmiden von Neu-Caledonien und den Loyalty-Inseln. In: Sarasin, F. & Roux, J.: *Forschungen in Neu-Caledonia. Zoologie*, (2)2(9): 173-194.
- Donskoff, M. (1988) Phasmatodea de Nouvelle-Caledonie. 1. Nouvelles signalisations et description de *Microcanachus* n. gen. In: Tillier, S. (ed.), *Zoologia Neocaledonica, I. Mémoires, Museum national d'Histoire naturelle, Paris*, (A)142: 53-60, fig. 1-13.

- Giglio-Tos, E. (1912) Specie nuove di Fasmidi raccolti dal Prof. L. Schultze nella Nuova Guinea. *Entomologische Rundschau, Stuttgart*, 29(8): 93-94.
- Günther, K. (1929) Die Phasmoiden der Deutschen Kaiserin Augusta-Fluss-Expedition 1912/13. Ein Beitrag zur Kenntnis der Phasmoidenfauna Neuguineas. *Mitteilungen aus dem Zoologischen Museum, Berlin*, 14: 600-747, pl. 1-7.
- Günther, K. (1953) Über die taxonomische Gliederung und die geographische Verbreitung der Insektenordnung der Phasmatodea. *Beiträge zur Entomologie, Berlin*, 3: 541-563.
- Gurney, A.B. (1947) Notes on some remarkable Australasian walkingsticks, including a synopsis of the genus *Extatosoma* (Orthoptera: Phasmatidae). *Annals of the Entomological Society of America*, 40: 373-396.
- Hennemann, F.H. & Conle, O.V. (1996) *Symetriophasma brevitarsa* n.gen., n.sp. - eine neue Phasmidae aus Neuguinea (Phasmatodea: Eurycanthinae). *Entomologische Zeitschrift*, 106(11): 457-460.
- Hennemann, F.H. & Conle, O.V. (1999) Typenmaterial im Naturhistorischen Museum Basel. *Entomologica Basiliensia*, 21: 5-12.
- Kirby, W.F. (1904) *A synonymic catalogue of Orthoptera. 1. Orthoptera Euplexoptera, Cursoria et Gressoria. (Forficulidae, Hemimeridae, Blattidae, Mantidae, Phasmatidae)*. British Museum, London.
- Montrouzier, P. (1855) Essai sur la faune de l'île de Woodlark ou Moïou. *Annales des la Société d'agriculture de Lyon*, (2)7: 1-5, 79-90.
- Redtenbacher, J. (1908) *Die Insektenfamilie der Phasmiden. III. Phasmidae Anareolatae (Phibalosomini, Acrophyllini, Necrosiini)*. Leipzig.
- Saussure, H.de (1868) Phasmidarum novarum species nonnullae. *Revue et Magazine de Zoologie*, (2)20: 63-70.
- Sharp, D. (1898) *Account of the Phasmidae, with notes on the eggs*. In: Willey, A.: *Zoological Results 2*. Cambridge University Press, pp. 75-94, pl. 7-9.
- Stål, C. (1875) *Recensio Orthopterorum. Revue critique des Orthoptères décrits par Linné, de Geer et Thunberg*. P.A. Norstedt & Söner, Stockholm.
- Uvarov, B.P. (1939) Twenty-four new generic names in Orthoptera. *Annals and Magazine of Natural History, London*, (11)3: 457-459.
- Westwood, J.O. (1859) *Catalogue of the Orthopterous Insects in the collection of the British Museum*. British Museum, London.
- Zompro, O. (1997) Beschreibung der Eier einiger Phasmatodea. *Arthropoda* 5(4): 1-3.